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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,917	01/16/2002	Peter Leo Straub	HU-5890	8320

26294 7590 07/31/2003

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EXAMINER

PAK, SUNG H

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 07/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/913,917

Applicant(s)

STRAUB, PETER LEO

Examiner

Sung H. Pak

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☒ Claim(s) 21 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6. 6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

References cited in the information disclosure statement filed 8/21/2001 have been considered by the examiner. Please refer to PTO-1449 enclosed herewith.

Claim Objections

Claim 21 is objected to because of the following informalities: the recitation "the interspaces" lack proper antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to

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whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 7 recites the broad recitation "electrically insulating material", and the claim also recites "Aramid-reinforced resin" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 4-5, 7, 9-13, 15-17, 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanahashi (JP 40-6167622A).

Tanahashi reference discloses a circuit board with all the limitations set forth in the claims, including: at least one electrical conduction layer ("9, 10") for relaying electrical signals or currents; at least one optical conduction layer ("5,6,7,8,11") for

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relaying optical signals; the layers being interconnected and arranged in a stack one above the other within the circuit board, characterized in that the optical conduction layer has at least one glass layer (abstract); at least one carrier plate ("2"); individual optical conductors ("11").

Claims 1-3, 7, 9-10, 14-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Mehlhorn et al (US 6,324,328 B1).

Mehlhorn et al reference discloses a device with all the limitations set forth in the claims, including: at least one electrical conduction layer for relaying electrical signals or currents (Fig. 1); optical conduction layer for relaying optical signals (Fig. 1 and column 1 lines 45-52); the conduction layers being interconnected and arranged in a stack one above the other within the circuit board (Fig. 1). Although Mehlhorn et al does not explicitly mention the use of passive optical layer, such as a glass layer as the optical layer, the use of passive glass layer is inherently taught by the reference (column 3 lines 7-13). Mehlhorn et al also discloses the optical layer arranged between the two carrier substrates (Fig. 1); coupling openings (Fig. 7) provided for optical coupling of optically active elements;

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mehlhorn et al (US 6,324,328 B1).

Mehlhorn et al reference discloses a device with all the limitations set forth in the claims as discussed above, except it does not explicitly teach the use of two glass layers disposed on opposite sides of a carrier plate. However, disposing multiple optical layers on either side of substrate is well known in the planar waveguide art. Such an arrangement provides a well known advantage of allowing for high-density optical waveguide packaging. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Mehlhorn et al device to have glass layers on either sides of the carrier substrate.

Claims 8, 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanahashi (JP 40-6167622A).

Regarding claim 8, Tanahashi reference discloses a device with all the limitations set forth in the claims as discussed above, except it does not teach the use of borosilicate glass. However, the use of borosilicate glass as a optical layer in integrated optical circuit device is well known and commonly taught in the planar waveguide art. Borosilicate glass has been advantageously used in the art to easily and cost effectively dispose optical layer via deposition method. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Tanahashi device to have borosilicate glass layer.

Regarding claims 18-20, Tanahashi reference discloses a device with all the limitations set forth in the claims as discussed above, except it does not teach removing certain portions of optical layer to create interspaces and coating the resulting individual optical conductors with a reflective layer. However, such a configuration is well known and commonly taught in the planar waveguide art. Such an arrangement provides a well known advantage of ability to efficiently confine the traveling light within the waveguiding portion of the optical layer. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Tanahashi device to have create interspaces in the optical layer and coat the resulting individual optical conductors with a reflective layer.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yoshimura et al (US 2002/0097962 A1), Tsukamoto et al (US 6,438,281 B1) disclose optical circuit board with optical waveguides and electrical conductors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (703) 308-4880. The examiner can normally be reached on Monday - Thursday : 6:30am-5:00pm.

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The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Sung H. Pak
Examiner
Art Unit 2874

sp
July 9, 2003



HEMANG SANGHAVI
PRIMARY EXAMINER